Analysis of Phosphorus Loading and Agricultural BMPs in the Lower Boise River Basin to Support Water Quality Trading

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The wastewater treatment facilities of the Lower Boise River will soon face new total phosphorus permit limits. While a Lower Boise Trading Framework (LBTF) was originally developed to facilitate water quality improvements through water quality trading, it has not been used for NPDES permit compliance (except for one offset project). In the decade since completion, many other water quality trading programs, approaches and new analytical tools and infrastructure have been developed to better support water quality trading for phosphorus and temperature. As communities in the Lower Boise watershed begin to evaluate facility-specific approaches to meeting new phosphorus limits and growth, it makes sense to incorporate the new tools to ensure that trading programs remain a secure compliance alternative and an integral component of an overall water quality improvement strategy.

To be effective, water quality trading programs need to accurately capture on-the-ground conditions at nonpoint source locations. This includes selection and calibration of field-scale and watershed-scale models that can be used in a water quality trading program for phosphorus. The Freshwater Trust evaluated potential models and compared them to the currently approved Surface Irrigation Soil Loss (SISL) model. As a case study, The Trust modeled sediment and phosphorus loss at the field-level in the Mason Creek subwatershed. The SISL modeling approach used is a landscape-level evaluation that incorporates multiple geospatial datasets to estimate sediment loss at an individual farm field. The Trust compared measured total phosphorus load to modeled loads in the Mason Creek subwatershed. The results of the Mason Creek case study identified a close agreement between the measured and modeled results. The Trust has concluded that the SISL model continues to be a good model choice for the Lower Boise River subbasin.